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Application Number	10/721,075
Filing Date	November 26, 2003
First Named Inventor	Koichiro TANAKA
Group Art Unit	1725
Examiner Name	M. Elve
Attorney Docket Number	0756-7223

ENCLOSURES (check all that apply)

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENTFirm
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Signature

Date

October 12, 2007

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Attorney Docket No. 0756-7223

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Koichiro TANAKA

Serial No. 10/721,075

Filed: November 26, 2003

For: LASER IRRADIATION APPARATUS,

LASER IRRADIATION METHOD,

AND METHOD FOR

MANUFACTURING A

SEMICONDUCTOR DEVICE

) Group Art Unit: 1725

) Examiner: Maria A. Elve

) CERTIFICATE OF MAILING

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) Adrian M. Stamps

)

RESPONSE AND INTERVIEW SUMMARY

Honorable Commissioner of Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Sir:

The Official Action mailed July 12, 2007, has been received and its contents carefully noted. This response is filed within three months of the mailing date of the Official Action and therefore is believed to be timely without extension of time. Accordingly, the Applicant respectfully submits that this response is being timely filed.

The Applicant appreciates Examiner Elve's time in conducting a telephonic interview on October 12, 2007. As described in more detail below, during the interview, the Applicant's representative explained that the present specification contains verbatim support for "visible light or shorter wavelength than that of visible light." The Examiner agreed that the new matter objection should be withdrawn and stated that she would issue a new Official Action.

The Applicant notes with appreciation the consideration of the Information Disclosure Statements filed on November 26, 2003; January 8, 2004; January 20, 2004; February 3, 2004; September 29, 2005; and April 3, 2006.

Claims 1, 2, 4-11, 13-20, 22-29, 31-38, 40-47 and 49-54 are pending in the present application, of which claims 1, 10, 19, 28, 37 and 46 are independent. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

The Official Action objects to the *Amendment* filed April 12, 2007 under 35 U.S.C. § 132(a) asserting that the recitation "visible light or shorter wavelength than that of visible" is not supported by the original disclosure. The Applicant respectfully disagrees and traverses the assertions in the Official Action. The feature of "visible light or shorter wavelength than that of visible light" is supported verbatim by the original disclosure, for example, at page 3, lines 18-19; page 4, lines 4-6; and page 7, line 34, to page 8, line 1. During the interview, the Examiner agreed that the specification supports the above-referenced recitation in each of the independent claims. Therefore, reconsideration and withdrawal of the objection is respectfully requested.

The Official Action rejects claims 1, 2, 4-11 and 13-18 as anticipated by U.S. Patent No. 6,700,096 to Yamazaki. The Applicant respectfully submits that an anticipation rejection cannot be maintained against the independent claims of the present application.

As stated in MPEP § 2131, to establish an anticipation rejection, each and every element as set forth in the claim must be described either expressly or inherently in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

It is noted that independent claims 1 and 10 are apparatus claims, which recite a first laser oscillator generating a first pulsed laser beam having a wavelength of visible light or a shorter wavelength than that of visible light. In other words, each of the independent claims recites a first pulsed laser beam having a wavelength of visible light or a shorter wavelength than that of visible light.

Initially, it is noted that the Official Action asserts that Yamazaki '096 is available as prior art under 35 U.S.C. § 102(b) (page 2, Paper No. 20061231). The Applicant

respectfully submits that Yamazaki '096 was published March 2, 2004, which is after the U.S. filing date of the present application. Therefore, Yamazaki '096 appears to be available under § 102(e), but not under § 102(b).

During the interview, the Applicant noted that Yamazaki '096 is only available under § 102(e). In response, the Examiner noted that the pre-grant publication of Yamazaki '096, i.e. U.S. Patent Application Publication No. 2003/0136772 to Yamazaki, published July 24, 2003, is prior art under § 102(a) and (e).

In any event, the Applicant respectfully submits that an anticipation rejection cannot be maintained against the independent claims of the present application. Independent claims 1 and 10 recite at least a first pulsed laser beam having a wavelength of visible light or a shorter wavelength than that of visible light, a second continuous wave laser beam of a solid laser, where the second continuous wave laser beam has a fundamental wave. Also, claims 1 and 10 recite means for controlling a shape and a position of a beam spot of the second laser beam to overlap with the beam spot of the first laser beam. These features are advantageous to effectively absorb the second laser beam having a fundamental wave in the semiconductor film because the semiconductor film is melted by irradiating the first laser beam thereby increasing the absorption coefficient of the fundamental wave. These features are supported in the present specification, for example, at least at page 7, line 33, to page 8, line 23 (see also Figure 1B). For the reasons provided below, the Applicant respectfully submits that Yamazaki '096 does not teach the above-referenced features of the present invention, either explicitly or inherently.

The Official Action asserts that Yamazaki '096 discloses that two types of lasers may be used, "these being, pulse oscillation and continuous oscillation," that the apparatuses "may be based on one laser or on a plurality of lasers" and that the wavelengths "may be the same or different" (page 2, Paper No. 20061231). The Applicant respectfully disagrees and traverses the assertions in the Official Action.

Yamazaki '096 may teach irradiating at least two laser beams, e.g. laser oscillation apparatuses 102a to 102d (Figures 1, 3A and 3B). However, Yamazaki '096 is silent as to the combination of a first pulsed laser beam having a wavelength of visible light or a shorter wavelength than that of visible light and a second continuous wave laser beam of a solid laser, where the second continuous wave laser beam has a fundamental wave. Rather, in Yamazaki '096, it appears that each of the laser oscillation apparatuses 102a to 102d is the same and directed to a continuous wave laser. Therefore, Yamazaki 096 does not teach or suggest a second continuous wave laser beam of a solid laser, where the second continuous wave laser beam has a fundamental wave, and which is overlapped with a first pulsed laser beam having a wavelength of visible light or a shorter wavelength than that of visible light, either explicitly or inherently.

Also, as noted above and discussed in the interview, the Official Action is silent as to the features of a first pulsed laser beam having a wavelength of visible light or a shorter wavelength than that of visible light.

Since Yamazaki '096 does not teach all the elements of the independent claims, either explicitly or inherently, an anticipation rejection cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 102 are in order and respectfully requested.

The Official Action rejects claims 19, 20, 22-29, 31-38, 40-47 and 49-54 as obvious based on the combination of Yamazaki '096, U.S. Patent No. 6,242,292 to Yamazaki and U.S. Patent No. 7,132,375 to Yamazaki. The Applicant respectfully submits that a *prima facie* case of obviousness cannot be maintained against the independent claims of the present application.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference

teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Independent claims 19 and 28 are method claims, which recite irradiating a processing object with a first pulsed laser beam having a wavelength of visible light or a shorter wavelength than that of visible light. Independent claims 37 and 46 are method claims, which recite irradiating the semiconductor film with a first pulsed laser beam having a wavelength of visible light or a shorter wavelength than that of visible light. In other words, each of the independent claims recites a first pulsed laser beam having a wavelength of visible light or a shorter wavelength than that of visible light.

As noted above, Yamazaki '096 appears to be available under § 102(e). However, Yamazaki '096, as a commonly owned reference under § 102(e), may not be considered for a rejection under § 103. Subject matter developed by another, which qualifies as prior art only under one or more of subsections 35 U.S.C. §§ 102(e), (f) and (g), is not to be considered when determining whether an invention sought to be patented is obvious under 35 U.S.C. § 103, provided the subject matter and the claimed invention were commonly owned at the time the invention was made. See MPEP § 2146. Since the disclosure by Yamazaki '096 and the claimed invention of the present application were, at the time the invention was made, subject to an obligation of

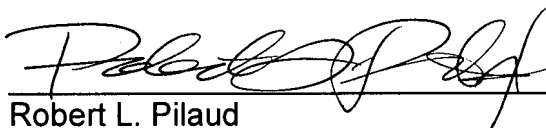
assignment to Semiconductor Energy Laboratory Co., Ltd., Yamazaki '096 may not be considered for a rejection under § 103. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

In the "Response to Arguments" section, the Official Action asserts that "no statement of common assignee or common ownership is contained within the application" (pages 7-8, Paper No. 20070709). The Applicant respectfully disagrees and traverses the assertions in the Official Action. The Applicant provided a statement of common ownership at page 18 of the *Amendment* filed April 12, 2007. Therefore Yamazaki '096 is not available as prior art in an obviousness rejection.

Even if the Examiner replaces Yamazaki '096 with the pre-grant publication Yamazaki '772 and asserts that it is prior art under § 102(a), independent claims 19, 28, 37 and 46 were previously amended in a manner similar to claims 1 and 10, as noted in detail above. Also, claims 19, 28, 37 and 46 recite that a beam spot formed on a surface of the processing object (semiconductor film) by the first laser beam and a beam spot formed on the surface of the processing object (semiconductor film) by the second laser beam are overlapped. Please incorporate the arguments above with respect to the deficiencies in Yamazaki '096. Yamazaki '292 and '375 do not cure the deficiencies in Yamazaki '096. The Official Action relies on Yamazaki '292 to allegedly teach absorptance (pages 5-6, Paper No. 20061231) and on Yamazaki '375 to allegedly teach specific values for absorptance (page 6, *Id.*). However, Yamazaki '096, '292 and '375, either alone or in combination, do not teach or suggest a second continuous wave laser beam of a solid laser, where the second continuous wave laser beam has a fundamental wave, and which is overlapped with a first pulsed laser beam having a wavelength of visible light or a shorter wavelength than that of visible light. Since Yamazaki '096, '292 and '375 do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Robert L. Pilaud', written over a horizontal line.

Robert L. Pilaud
Reg. No. 53,470

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